

Appln. No. 09/581,329

Amdt dated June 3, 2003

Reply to Office action of November 4, 2002

REMARKS/ARGUMENTS

Claims 16 - 30 were examined in the final Office action dated November 4, 2002. Claims 16 - 30 stand rejected under 35 U.S.C. § 112, first and second paragraphs, and under 35 U.S.C. §103(a). In addition, claim 25 stands rejected under 35 U.S.C. §102. Applicants filed a Notice of Appeal on April 3, 2003. By this amendment and the accompanying Request for Continued Examination, Applicants hereby withdraw the Notice of Appeal, amend claims 16 - 20, 22 - 24 and 27 and submits claims 16 - 30 for reconsideration.

Response to Rejection of Claims 16-30, 35 U.S.C. 112, First Paragraph

Claims 16 - 30 stand rejected under 35 U.S.C. 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Office action states in paragraph 3 that "this rejection is maintained for the reasons set forth in the last office action." The section 112, first paragraph rejection in the last Office action was based on Applicants' use of the terms "overcasting" and "tacking" in the specification and the claims.

Paragraph 10 on page 8 of the final Office action recites two definitions of "casting" and "tacking" and states that "although it is argued that a knitting or stitching technique was apparently the intended meaning of the terms, the original disclosure is not considered sufficient to suggest that to the ordinary artisan." The Office action then adds that "there has been insufficient guidance provided to the artisan to enable practice of the invention consistent with these requirements."

Applicants disagree with the contention that there is any ambiguity as to the meaning of these terms. Attached hereto as

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Exhibit A are copies of dictionary entries for the terms "overcasting" and "tacking." As shown in page 1606 of Exhibit A there is only one definition for the term "overcasting" and this definition explicitly refers to "stitching." The definition of "casting" referred to in the Office action is irrelevant as the term "casting" is not present in the claims.

As shown in page 2326 of Exhibit A "tacking," as defined by "tack" includes the definition "to stitch together lightly."

Since the term "overcasting" describes stitching, and the reference to stitching in the definition of "tacking" refers to stitching lightly, it would be apparent to one skilled in the art that the conductor is to be stitched, in a loose manner, to the complementary preform.

Applicants also disagree with the contention that the disclosure provides insufficient guidance to the artisan to enable practice of the invention. One skilled in the art would read these terms in the context of the entire disclosure. The specification describes examples of how the conductor is loosely fixed so that it is initially in a "zigzagged" configuration and can then "withstand the stretching of the preforms" up to, for example, 150% (see, for example, the discussion related to Figure 4 at page 9, lines 8 - 22). Hence, it would be apparent to one skilled in the art that the conductor is to be attached to the complementary preform so as to hold the conductor to the complementary preform yet allow the conductor to straighten from the "zigzagged" orientation as the complementary preform is stretched.

Given that the terms "overcasting" and "tacking" refer to loose stitching, it would be apparent to one skilled in the art that the conductor is to be stitched, in a loose manner, to the complementary preform so as to hold the conductor to the complementary preform yet

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allow the conductor to slide withing the stitches as the complementary preform is stretched.

In summary, one skilled in the art would understand that the claimed method involves stitching, and that the stitching be sufficiently loose to allow the conductor to move relative to the stitches. Accordingly, Applicants submit that this section 112 rejection should be withdrawn.

The Office action also states in paragraph 3 on page 3 that it is unclear "what is meant by 'fastening of the free ends'" and "how the claimed tire is even to be built insofar as apparently it is not built as the vast majority of tires are built."

Applicants note that their previous argument could have been more precise and appreciate the Examiner's thoroughness in this regard. Applicants anticipate that the following will explain, more precisely, the claimed method.

Applicants intended to point out that in some conventional tire manufacturing processes, preform components of the raw tire that are prepared separately and have a rectangular shape may be linked at the free ends. Such components may include, for example, a rubber underlayer (e.g., sealing layer 4 in Applicants' Figure 2).

Applicants did not imply that the radial carcass ply 3 is linked at its free ends. Such a ply would be wound on the underlayers as in conventional tire manufacturing, and the assembly would be stretched "in an outward general direction," e.g., toroidal shaping.

In summary, the technique of "linking" "free ends of the deformable preform" is a known method of manufacturing a tire. Thus, one skilled in the would understand how perform the claimed method. Accordingly, Applicants submit that this section 112 rejection should be withdrawn.

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Response to Rejection of Claims 16-30, 35 U.S.C. 112, Second Paragraph

Claims 16 - 30 stand rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office action raises several issues, each of these will be addressed in turn.

At page 4, it was suggested that the period in the references to steps "a.", "b.", etc. be replaced with parentheses or the like. Applicants have amended the claims in the suggested manner as set forth above.

At page 4, the Office action states that in claim 16 "the scope of the process being modified is not clear" due to the language used in the preamble. Applicants have amended the preamble of claim 16 as set forth above to address this issue.

At page 4, the Office action states that in claim 16 "the phrase 'homologous said first rectangular general shape' is grammatically awkward and confusing." Applicants have amended claim 16 as set forth above to address this issue.

At page 4, the Office action states that "it is not entirely clear what is meant by 'linking of the free ends of the preform.'" Applicants have addressed this issue in their response to the rejection under section 112, first paragraph, set forth above.

At page 5, the Office action states that "it is still not considered that the scope of protection afforded by defining that the conductor is fixed 'in a loose manner' can be adequately and readily ascertained." Applicants have addressed this issue in their response to the rejection under section 112, first paragraph, set forth above.

At page 5, the Office action states that claim language relating to the path of the conductor "along," etc. a length and width of the preform is indefinite in view of applicants prior remarks. Applicants note that their previous argument could have been more precise and

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appreciate the Examiner's thoroughness in this regard. Applicants did not intend to suggest that "the conductor must extend from bead to bead across the entire tire." Applicants anticipate that the following will explain, more precisely, the claimed inventions.

This issue arose in conjunction with the rejection of claim 16 under section 103. Claim 16 recites, in part: "a complementary preform comprising an elastic support, of a second rectangular general shape," "having at least one conductor fixed thereon in a loose manner, along a path having a third rectangular general shape," "such that said third rectangular general shape extends substantially across a length and a width of said first rectangular general shape."

By this method, the claimed invention enables one to build a tire with the shape of a resulting loop extending substantially along a periphery of the tire. It is, in part, by this feature that the claimed invention is patentable over the references cited in the section 102 rejection.

At page 6, the Office action states that "it is still not clear what a technique of 'overcasting' or 'tacking' kind (claim 21) represents." Applicants have addressed this issue in their response to the rejection under section 112, first paragraph, set forth above.

At page 6, regarding claim 27, the Office action states that "it is not clear whether the claim now is intended to encompass only a tire or a tire in combination with some external loop" and suggested that the claim be amended to reflect the claimed capability of the tire. Applicants have amended claim 27 in the suggested manner as set forth above.

Response to Rejection of Claims 16-24, 35 U.S.C. 112, First Paragraph

Claims 16 - 24 stand rejected under 35 U.S.C. 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey

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to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Office action states, in part: "it is not clear where support exists in the original disclosure for tying the two 'linking' steps in time as now defined in step 'c.'" Step (c) of claim 16 recites "linking free ends of the complementary preform together, substantially when the free ends of the deformable preform are linked together."

As discussed at page 2, lines 13 through pages 3, line 17, the specification describes step ii) of a process that includes "holding this preform wound on a support of circular shape," and further includes "holding this complementary preform and the aforementioned preform, on the support of circular shape." Moreover, step iii) recites "continuing the manufacture of the tire . . . with stretching of the preform thus held, in an outward general direction, after the fastening of its free ends." Thus, the "substantially when" language of step (c) is supported by the original disclosure since step ii) relates to the holding of both preforms, and the stretching of step iii) is performed after the free ends of each of the preforms is fastened.

Response to Rejection of Claims 16 - 18 under 35 U.S.C. 103(a)

Claims 16 - 18 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Pollack et al. (US 5,181,975). The last Office action states, in part, in paragraph 6:

Pollack et al. discloses building a tire with a preformed conductor fixed therein, this conductor having what can be termed a "rectangular general shape" (e.g. note fig. 4). Further, this reference clearly indicates that the conductor is incorporated in the tire on the drum prior to toroidal shaping - note esp. col. 10, lines 6-18. As

already noted, it is not clear what is included by requiring that the conductor be "fixed in a loose manner" - it is however submitted that since some relative conductor movement is contemplated (note esp. col. 10, lines 14-15), it is not unreasonable to consider this to meet the present claims. . . . Although the conductor in this reference is located adjacent the beads and thus is not located under the tread, nothing in the present claims defines over a location in the beads.

Independent claim 16 claims a method including "preparing a complementary preform comprising an elastic support, of a second rectangular general shape, homologous said first rectangular general shape, said complementary perform having at least one conductor fixed thereon in a loose manner, along a path having a third rectangular general shape, and adding the complementary preform to the deformable preform on said support in said assembly, such that said third rectangular general shape extends substantially across a length and a width of said first rectangular general shape."

Pollack et al. does not teach or suggest the claimed method with a "complementary preform having at least one conductor fixed thereon in a loose manner." Rather, Pollack et al. teaches away from such a construction. At column 3, lines 36 - 67 Pollack et al. states that a system with an antenna and transponder in the "tread area or upper sidewall" "would have to be accomplished after the tire had taken on its toroidal shape" and that "a transponder of this design would not be expected to be durable in normal use because of its required positioning in the upper sidewall or read areas of the tire." Thus, Pollack et al. teaches that an antenna would have to be added after toroidal shaping to avoid the stretching the antenna and expresses doubt as to whether such a system would even work. It follows then, that one skilled in the art would not read Pollack et al. as teaching

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or suggesting any method of solving problems associated with conductors being stretched, much less the specific method of the claimed invention.

Moreover, Pollack et al. is silent as to how its antenna coil is attached to the tire. Hence, one skilled in the art would not read Pollack et al. as teaching or suggesting "a complementary preform comprising an elastic support, of a second rectangular general shape, homologous said first rectangular general shape, said complementary perform having at least one conductor fixed thereon in a loose manner."

Applicants claimed invention on the other hand may be used to solve a very difficult problem: installing a loop close to the periphery of a tire, during its manufacture. There are very significant advantages in placing loops across the periphery of the tire. These advantages are discussed in the specification, for example, beginning at page 10, line 15.

The periphery of the tire, however, is a very sensitive portion, during manufacture. Manufacturers do not accept modifications in that manufacture, unless they can be reasonably sure that it does not change the mechanical properties of the tire, which of course have the utmost priority. The claimed invention provides a solution to this problem though the use of the "complementary preform." In this way, tire manufacturers may embody one or more loops or coils in the periphery of a tire without substantially modifying their manufacturing process. Thus, the method of claim 16 provides a solution to problems that were not adequately addressed by the prior art.

For at least this reason, claim 16 is not obvious in view of Pollack et al. Accordingly, independent claim 16 and its dependent claims (claims 17 - 24) are patentable over Pollack et al.

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Response to Rejection of 25 under 35 U.S.C. 102(b)

Claim 25 stands rejected under 35 U.S.C. 102(b) as allegedly being anticipated by DE 2524463 to Breuer. The last Office action states at paragraph 7:

DE '463 discloses a tire having an implanted conductor under the tread that further would seem to be in "rectangular general shape" when flat and oriented in the claimed manner in light of figs. 2a and 2b.

Independent claim 25 claims a tire having "fixed under its tread, at least one conductive loop which has, when opened out flat, a rectangular general shape, a short side of the rectangular general shape extending substantially over a width of the tire and a long side of the rectangular general shape extending substantially along a periphery of the tire." This structure is not taught or suggested by Breuer or any of the other cited references.

Breuer does not disclose "a short side of the rectangular general shape extending substantially over a width of the tire." Thus, claim 25 is not anticipated by Breuer. Accordingly, independent claim 25 and its dependent claims (claims 26 - 30) are patentable over Breuer.

Response to Rejection of Claims 16 - 19 under 35 U.S.C. 103(a)

Claims 16 - 19 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Schuermann (US 5,479,171). The last Office action states in paragraph 8:

Schuermann discloses building a tire with an antenna formed from a conductor shaped in rectangular form (fig. 1). Further, the reference indicates that the antenna can be incorporated within the structure of the tire (e.g. sidewall) in an "integrated manufacturing process" (col. 3, lines 48-52). Although this reference does not provide any more specifics of the manufacturing process, it is well

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known, conventional and common in this art to build up the various tire plies on a cylindrical drum followed by expansion to toroidal form as claimed. To incorporate the rectangular conductor during this initial building on the cylindrical form would therefore have been an obvious manner to build the desired tire. Further, to aid in building efficiency as well as to help maintain the desired shape of the antenna, to preincorporate the rectangular conductor forming the antenna within an elastomeric substrate would have been obvious, it further being noted that it is extremely common and well known in this art to preincorporate almost every reinforcement material with elastomer prior to the building steps for similar reasons. Further, as is well known, the embedded reinforcement materials in tires commonly do reorient within the tire (e.g. "pantograph") during tire building/shaping (prior to curing) and thus it would seem reasonable to term such as "loose" fixing - following such conventional embedding techniques would thus likewise be expected to result in "loose" fixing of the conductor.

As to claim 2, insofar as locations both on and adjacent to the tire interior are clearly contemplated (e.g., figs. 4a, 4b), any location in this area, including between the carcass and liner plies, would have been obvious.

As the above quotation concedes, Schuermann does not teach or suggest most aspects of the claimed method. Schuermann does not teach or suggest (1) "preparing a complementary preform"; (2) such "complementary preform comprising an elastic support"; (3) such complementary preform being "of a second rectangular general shape, homologous said first rectangular general shape"; (4) such a

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"complementary preform having at least one conductor fixed thereon"; (5) such conductor being "fixed thereon in a loose manner"; (6) "adding the complementary preform to the deformable preform on said support in said assembly"; or (7) "said third rectangular general shape extends substantially across a length and a width of said first rectangular general shape".

Instead, the rejection relies on the contention that all of these limitations are inherently obvious. Applicants respectfully submit that this rejection is improper because there is no evidence of how one skilled in the art would have been motivated to combine all of these limitations.

For example, regarding providing a complementary preform with conductors, there is no showing that in view of Schuermann one skilled in the art would have even appreciated the problems addressed by the claimed invention.

Schuermann discloses windings in the lateral portion of the tire, i.e., close to the rim. Hence, Schuermann is not concerned with and does not address the problem of how to place conductors in a tire and avoid stretching problems such as those associated with toroidal shaping.

In addition, the issues associated with "embedded reinforcement materials in tires" are of an entirely different nature than the claimed invention. Reinforcement materials are, by definition, very strong materials. As such, they do not break when the tire is stretched. Thus, there was no motivation for one skilled in the art to loosely couple such reinforcement materials in the claimed manner.

In contrast, the conductors of the claimed invention may be relatively fragile and any breakage could render the coil useless. Thus, it would not have been obvious to create the claimed invention in view of the such reinforcement materials. In summary, there is

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nothing in Schuermann that would motivate one skilled in the art to address the problems solved by the claimed method.

Moreover, there is no teaching or suggestion in any of the cited references to use the specific methods and structure of the claimed inventions. This lack of teaching is particularly apparent given the number of limitations of the claimed invention (as set forth above) that are not disclosed or taught by the cited references.

For at least these reasons, claim 16 is not obvious in view of Schuermann. Accordingly, independent claim 16 and its dependent claims (claims 17 - 24) are patentable over Schuermann.

Response to Rejection of Claims 20 - 30 under 35 U.S.C. 103(a)

Claims 20 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann (US 5,479,171) taken in view of WO 90/12474 to Malmer et al. The last Office action states in paragraph 9:

As to claim 10 directed to the tire, Schuermann only seems to depict the antenna located in the sidewall of the tire. WO '474 is directed to similar sensor systems and in particular indicates that the conductor or antenna can suitably be provide in a number of locations in the tire, including in the tread area (note esp. fig. 4). to provide the rectangular antenna of Schuermann in the tread area would therefore have been obvious in light of this teaching.

As discussed above, Schuermann does not teach or suggest most aspects of the claimed invention. Hence, the combination of Malmer et al. with Schuermann still fails to teach or suggest most the of the limitations of independent claim 16 as discussed in the previous section.

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None of the cited references, including Malmer et al., provide the solution relating to how to effectively build a tire with a loop in the tread area as addressed in the claimed invention. Accordingly, independent claim 16 and its dependent claims (claims 17 - 24) are patentable over Schuermann in view of Malmer et al.

Given the manufacturing difficulties of placing, Applicants contend that it would not have been obvious to modify Schuermann so that the antenna is in the tread area.

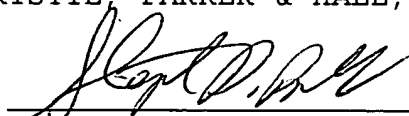
Moreover, the claimed combination does not teach or suggest the specific structure claimed in independent claim 25. For example, neither Schuermann nor Malmer et al. teach or suggest "at least one conductive loop which has, when opened out flat, a rectangular general shape, a short side of the rectangular general shape extending substantially over a width of the tire and a long side of the rectangular general shape extending substantially along a periphery of the tire." Accordingly, independent claim 25 and its dependent claims (claims 26 - 30) are patentable over Schuermann in view of Malmer et al.

SUMMARY

In summary, the cited references, considered either separately or in combination, teach the claimed method and tire. Accordingly, Applicants submit that pending claims 16 - 30 are in condition for allowance and respectfully request that the application be passed to issue.

Respectfully submitted,
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